



## **COVER PAGE FOR TEST REPORT**

Test Item Description:	Personal Computer
Model/Type Reference:	MS-6289, MS-6410xxxxxx, Hetis 945xxxxxx, Hetis 915xxxxxx, MS-6415xxxxxx, Hetis 800xxxxxx, AE510, iShared mini, MS-6439XX, Hetis 900, MS-6441XX, Hetis 965XX, MS-6470XX, Hetis G31XX, MS-6618XXXX and Hetis G41XXXX (where x and X = A-Z, 0-9 or blank, and no impact any critical safety components and constructions)
Rating(s):	100-127 Vac / 200-240 Vac, 6 A / 3 A, 47-63 Hz
Standards:	IEC 60950-1:2001, First Edition and/or EN 60950-1:2001 + A11:2004
Applicant Name and Address:	MICRO-STAR INTERNATIONAL CO LTD 69 LI-DE ST CHUNG HO TAIPEI HSIEN 235 TAIWAN
Factory Location(s):	1. MSI ELECTRONICS (KUNSHAN) CO LTD 88 E QUANJIN RD, KUNSHAN JIANGSU 215300, CHINA  2. MSI COMPUTER (SHENZHEN) CO LTD LONGMA INFORMATION TECHNOLOGY IND PARK, TANGTOU VILLAGE SHIYAN TOWN, BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA  3. MICRO-STAR INTERNATIONAL CO LTD 69 LI-DE ST, CHUNG HO TAIPEI HSIEN 235, TAIWAN  4. NETWORK ENGINES INC 25 DAN RD, CANTON, MA 02021, UNITED STATES
This Report includes the following parts, in addition to this cover page: <ol style="list-style-type: none"><li>1. Specific Technical Criteria</li><li>2. Critical Components</li><li>3. Enclosures<ol style="list-style-type: none"><li>a. Photographs</li><li>b. Diagrams</li></ol></li></ol>	
The original report was modified on 2009-01-13 to include the following changes/additions: - This test report was deemed to correct, due to: Correct the model names from Heits G31XX, Heits G41XXXX to Hetis G31XX, Hetis G41XXXX.	
All applicable tests according to the above standard(s) have been carried out. Test results are valid only for the tested equipment. This Test Report can be reproduced only in whole. Amendments and corrections can be reproduced only with the original CB Test Report. Written permission from UL International Demko A/S is required if the test report is copied in part.	

	<p>Test Report issued under the responsibility of:</p> <p><b>UL International Demko A/S</b></p>	
<p><b>TEST REPORT</b> <b>IEC 60950-1, First Edition</b> <b>Information technology equipment-Safety</b> <b>Part 1: General Requirements</b></p>		
<p><b>Report Reference No</b> ..... : E203413-A46-CB-4 <b>Date of issue</b> ..... : 2009-01-12 <b>Total number of pages</b> ..... : 27</p>		
<p><b>CB Testing Laboratory</b> ..... : Underwriters Laboratories Taiwan Co., Ltd. <b>Address</b> ..... : 260 Da-Yeh Road, 112 Peitou Taipei City, Chinese Taipei</p>		
<p><b>Applicant's name</b> ..... : MICRO-STAR INTERNATIONAL CO LTD 69 LI-DE ST <b>Address</b> ..... : CHUNG HO TAIPEI HSIEN 235 TAIWAN</p>		
<p><b>Test specification:</b> <b>Standard</b> ..... : IEC 60950-1:2001, First Edition <b>Test procedure</b> ..... : CB Scheme <b>Non-standard test method</b> ..... : N/A</p>		
<p><b>Test Report Form No.</b> ..... : IEC60950_1B <b>Test Report Form originator</b> ..... : SGS Fimko Ltd <b>Master TRF</b> ..... : dated 2003-03</p>		
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<b>Test item description</b> .....	Personal Computer
Trade Mark .....	MSI
Model/Type reference .....	MS-6289, MS-6410xxxxxx, Hetis 945xxxxxx, Hetis 915xxxxxx, MS-6415xxxxxx, Hetis 800xxxxxx, AE510, iShared mini, MS-6439XX, Hetis 900, MS-6441XX, Hetis 965XX, MS-6470XX, Hetis G31XX, MS-6618XXXX and Hetis G41XXXX (where x and X = A-Z, 0-9 or blank, and no impact any critical safety components and constructions)
Manufacturer .....	SAME AS APPLICANT
Rating .....	100-127 Vac / 200-240 Vac, 6 A / 3 A, 47-63 Hz

<b>Testing procedure and testing location:</b>	
<input checked="" type="checkbox"/> <b>CB Testing Laboratory</b>	
Testing location / address..... :	Underwriters Laboratories Taiwan Co., Ltd. 260 Da-Yeh Road, 112 Peitou Taipei City, Chinese Taipei
<input type="checkbox"/> <b>Associated CB Test Laboratory</b>	
Testing location / address..... :	
Tested by (name + signature) ..... :	Reon Tsai
Approved by (+ signature) ..... :	Frank Liu
 	
<input type="checkbox"/> <b>Testing Procedure: TMP</b>	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
Testing location / address..... :	
<input type="checkbox"/> <b>Testing Procedure: WMT</b>	
Tested by (name + signature) ..... :	
Witnessed by (+ signature)..... :	
Approved by (+ signature) ..... :	
Testing location / address..... :	
<input type="checkbox"/> <b>Testing Procedure: SMT</b>	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
Supervised by (+ signature) ..... :	
Testing location / address..... :	
<input type="checkbox"/> <b>Testing Procedure: RMT</b>	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
Supervised by (+ signature) ..... :	
Testing location / address..... :	

Issue Date: 2009-01-12  
Correction 1 2009-01-13

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Report Reference #

E203413-A46-CB-4

**Summary of Testing:**

No tests were conducted

**Summary of Compliance with National Differences:**

AR, AT, AU, BE, CA, CH, CN, CZ, DE, DK, EU, FI, FR, GB, GR, HU, IL, IN, IT, JP, KE, KR, MY, NL,  
NO, NZ, PL, SE, SG, SI, SK, US

**Copy of Marking Plate** - Refer to Enclosure titled Marking Plate for copy.

**Test item particulars :**

Equipment mobility .....	movable
Operating condition .....	continuous
Mains supply tolerance (%) .....	+6%, -10%
Tested for IT power systems .....	No
IT testing, phase-phase voltage (V) .....	IT, 230 V (for Norway)
Class of equipment .....	Class I (earthed)
Mass of equipment (kg) .....	8 (for motherboard/ MS-7137), 8.487 (for motherboard/ MS-7231) and 8 (for motherboard/ MS-7259 and MS-7331), 8.2 (for motherboard/ MS-7334), 8.24 (for motherboard/ MS-7407), and 8.24 (for motherboard/ MS-7430)
Protection against ingress of water .....	IP X0

**Possible test case verdicts:**

- test case does not apply to the test object .....	N / A
- test object does meet the requirement .....	P(Pass)
- test object does not meet the requirement .....	F(Fail)

**Testing:**

Date(s) of receipt of test item .....	N/A
Date(s) of Performance of tests .....	N/A

**General remarks:**

The test results presented in this report relate only to the object tested.  
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Refer to the Cover Page For Test Report for a list of all Factory Locations.

**GENERAL PRODUCT INFORMATION:**

**Report Summary**

The original report was modified on 2009-01-13 to include the following changes/additions:

- This test report was deemed to correct, due to:  
Correct the model names from Heits G31XX, Heits G41XXXX to Hetis G31XX, Hetis G41XXXX.

**Product Description**

Consist of power supply, RTC Battery, DC fans, HDD, CD-ROM/ DVD-ROM and electronic components mounted on PWB, and housed in metallic enclosure, secured together by screws.

### Model Differences

- Models MS-6410xxxxxx, MS-6415xxxxxx, Hetis 800xxxxxx, Hetis 945xxxxxx and Hetis 915XXXXX, where X and x = A-Z, 0-9 or blank, are identical to MS-6289 except for model designation and Mainboard type.
- Model AE510 is identical to Model Hetis 915XXXXX except for model designation.
- Model iShared mini is identical to Model Hetis 915XXXXX except for model designation.
- Models MS-6439XX and Hetis 900 are identical to Model MS-6410 except for model designation.
- Models MS-6441XX and Hetis 965XX are similar to Model MS-6410 except for model designation and Mainboard type.
- Model MS-6441XX is identical to Model Hetis 965XX except for model designation.
- Models MS-6470XX and Hetis G31XX are identical to Model Hetis 965XX except for model designation and Mainboard type.
- Models MS-6618XXXX and Hetis G41XXXX are similar to Model MS-6470XX except for model designation and Mainboard type.
- Model Hetis G41XXXX is similar to Model MS-6618XXXX except for model designation.

### Additional Information

- Models MS-6415xxxxxx and Hetis 800xxxxxx are for Mainboard MS-7259.
- Models MS-6410xxxxxx and Hetis 945xxxxxx are for Mainboard MS-7231.
- Models MS-6289, Hetis 915XXXXX, AE510 and iShared mini are for Mainboard MS-7137.
- Models MS-6439XX and Hetis 900 are for Mainboard MS-7331.
- Models MS6441XX and Hetis 965XX are for Mainboard MS-7334.
- Models MS-6470XX and Hetis G31XX are for Mainboard MS-7407.

Models MS-6618XXXX and Hetis G41XXXX are for Mainboard MS-

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For project 07CA46287:

- Revised main board connector circuit of MSI., P/N MS-7334.

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For project 07CA50270:

- Revised main board connector circuit of MSI., P/N MS-7407.

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For project 07CA62891:

- Alternate metal enclosure.

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- For report issue 4, re-issue, included below revision:

01, add new models MS-6618XXXX and Hetis G41XXXX;

02, alternate mainboard type MS- 7430 for models MS-6618XXXX and Hetis G41XXXX only.

For CB, 08CA59344:

This report is re-issued from E203413-A46-CB-3 with Amendment 3 issued 2007-12-26, with CB Certificate No. (DK-11718-A4, DK-11719-A3, DK-11720-A3), issued 2008-01-02 due to modify below items:

- (01). Add new models MS-6618XXXX and Hetis G41XXXX (where x and X = A-Z, 0-9 or blank, and no impact any critical safety components and constructions).
- (02). Alternate mainboard type MS- 7430 for models MS-6618XXXX and Hetis G41XXXX.
- (03). Delete the trademark NETWORK ENGINES, INC and PACKETEER, INC.
- (04). Revise the address of factory NETWORK ENGINES INC from 25 DAN RD, CANTON, MA 02021, USA to 25 DAN RD, CANTON, MA 02021, United States.

- Only the following tests were deemed necessary:

- 1.6.2- INPUT TEST: SINGLE-PHASE Test.
- 2.5- Limited Power Source Measurements Test.
- 4.1-Stability Test
- 4.3.8- Lithium Battery Reverse Current Measurement Test.
- 4.5.1, 1.4.12, 1.4.13- Heating Test.
- 5.3.1, 5.3.8.2- Abnormal Operation Test.
- 5.3.6- Overload of operator Accessible Connector Test.

#### **Technical Considerations**

The product was submitted and tested for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: 40°C

The means of connection to the mains supply is: Detachable power cord, Pluggable A

The product is intended for use on the following power systems: IT, TN

The equipment disconnect device is considered to be: Appliance inlet

The class of laser product is: Class 1 (I), applied on R/C CD-Rom and/or DVD-Rom.,

The product was investigated to the following additional standards: EN 60950-1:2001 + A11:2004 (which includes all European national differences, including those specified in this test report)., U.S. Code of Federal Regulations, 21 CFR 1040 and IEC 60825-1.,

The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): USB ports, PS/2 ports, IEEE1394 ports.

The power supply in this equipment was: Investigated to an earlier edition/amendment of IEC 60950. As part of the investigation of this product, the power supply and its test report were reviewed and found to comply with IEC 60950-1.



IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	<b>TABLE: list of critical components</b>					Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity <sup>1)</sup>	
2. Power supply cord (Optional)	--	--	Detachable, Type SVT or SPT-2, 125/250 V min., 18 AWG min., 4.5 m long max., one end with, grounding type, NEMA 5- 15P/ NEMA 6- 15P. Other end with appliance coupler.	UL62, UL498, or UL817	UL, --	
3. Metal Enclosure	--	--	Consists of two parts, secured together by physical fit and screw, Overall 330 by 320 by 94 mm, 0.8 mm thick minimum for both parts, see enclosure 4- 01.	--	--, --	
3a. Metal Enclosure (Alternate)	--	--	Consists of two parts, secured together by physical fit and screw, Overall 330 by 320 by 94 mm, 0.8 mm thick minimum for both parts, see enclosure 4- 09.	--	--, --	
4. Plastic Panel	--	--	HB minimum, overall 320 by 94 by 44 mm, 2.5 mm thickness minimum, secured to enclosure by screws.	UL94	UL, --	
5A. Connectors and Receptacles	--	Metal/Plastic	Copper alloy pins housed in	UL94	UL, --	

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
(Secondary ELV/SELV circuits)			bodies of plastic rated V-2 min.		
5B. Connectors and Receptacles (Secondary ELV/SELV circuits)	--	--	--	UL498, UL1977.	UL, --
5C. Connectors, (for network)	--	--	Type RJ-45	UL1863	UL, --
6. Built-in Power Supply	Delta Electronics Inc.	DPS-250AB-7 XX	I/P: 100-127 Vac/7 A, 200-240 Vac/4 A, 47-63 Hz, O/P: DC +3.3 V/16.0 A, +5 V/16.0 A, +12 V/16.0 A, +5 Vsb/2 A, -12 V/0.8 A. Class I.	UL60950, IEC60950-1: 2001, EN60950-1: 2001.	UL, TUV Rheinland, Certificate No. JPTUV-010215, Test Report Reference No. 11003719 001.
06a. Built-in Power Supply (Alternate) (For model MS-6415xxxxxx, Hetis 800xxxxxx, MS-6410xxxxxx, Hetis 945xxxxxx with main board MS-7231, MS-7259, MS-6439XX and Hetis 900) (Also for Model MS-6441XX, Hetis 965XX with main board MS-7334) (Also for Model MS-6470XX, Hetis G31XX with main board MS-7407) (Also for Models MS-6618XXXX and Hetis G41XXXX with main board MS-7430)	FSP Group Inc.	FSP250-50MSP	I/P: 100-120/220-240 Vac, 60/50 Hz, 6/3 A. O/P: DC +3.3 V/16.0 A, +5 V/16.0 A, +12 V/16.0 A, +5 Vsb/2 A, -12 V/0.8 A. +3.3 V & +5 V & +12 V = 234 W maximum, +3.3 V & +5 V = 110 W maximum, Total output power = 250 W maximum. Class I.	UL60950, IEC60950-1: 2001, EN60950-1: 2001.	UL, TUV (Certificate No. JPTUV-014499, Test Report Reference No. 11006604 001)

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
7. Plastic Stand Base	Various	Various	Minimum HB, 60 degree C, 0.175Kg, dimension see diagram 4-10 for detail.	UL498, UL1977.	UL, --
8. System Fan	Sunonwealth Electric Machine Industry Co., Ltd.	KDE1206PHV2	One provided, rated 12 Vdc, 0.09 A, 18 CFM	UL507, EN60950-1: 2001	UL, CAS, TUV
8a. System Fan (Alternate)	Delta Electronics Inc.	AFB0612MC	12 Vdc, 0.17 A maximum. 18.15CFM.	UL507	UL, --
8-1. Metal mesh for system fan	--	--	Metal, secured to enclosure by screw, dimension see diagram 4-13 for detail.	--	--, --
9A. Hard Disk (Optional)	Seagate Technology	ST3XXYY-XX	Rated 5 Vdc, 1.5 A maximum; 12Vdc, 1.5A maximum	UL60950-1, EN60950	UL, TUV
9B. Hard Disk (Optional)	Hitachi Global Storage Technology	HDS7225nnVLA Tnn (n:0-9)	Rated 5 Vdc, 1.5 A maximum; 12 Vdc, 2.0 A maximum	UL60950-1, EN60950	UL, TUV
10. Card Reader (Optional)	--	--	Connected to connector JFP1 (USB) on mainboard.	--	--, --
11A. DVD-ROM Drive (Optional)	Micro-Star International Co., Ltd.	MS-8448M	Rated 5 Vdc/ 12 Vdc, 1.6 A max., Laser Class 1	UL60950-1	UL, --
11B. DVD-ROM (Optional)	Pioneer Corporation	DVR-107DB	Rated 5 Vdc, 1.1 A; 12 Vdc, 0.8 A, Laser Class 1	UL60950-1	UL, --
12. Insulating tubing/Sleeving	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 105 degree C, 300 V, provided with F1.	UL224	UL, --
13. Wiring, internal secondary ELV/SELV	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or	UL758	UL, UL

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

circuits			marked VW-1; min 30 V, 80 degree C.		
14. Interconnecting Cable (Optional)	--	--	60 degree C min., 60 V min., 3.05 m long max., jacketed except for USB, IEEE 1394 and PS/2 cable, VW-1 or FT-1	UL758	UL, --
15. Internal Plastic Part Materials	--	--	V-2 min.	UL94	UL, --
16. Speaker (Optional)	--	--	8 ohm, 1 W	--	--, --
Motherboard, MSI, type MS-7137	--	--	--	--	--, --
01. PWB	--	--	V-0 or better, min. 105 degree C	UL796	UL, --
02a. CPU Fan	Delta Electronics Inc.	AFB0712HHB-5B25	One provided, rated 12 Vdc, 0.45 A, 35.31 CFM	UL507, EN60950-1: 2001	UL, CAS, VDE
02b. CPU Fan (alternate)	Delta Electronics Inc.	AFB0812HD	One provided, rated 12 Vdc, 0.27 A, 43.941 CFM.	UL507, EN60950-1: 2001	UL, CAS, VDE
03a. RTC Lithium Battery	Sony Fukushima Corp.	CR2032	3.0 Vdc, 210 mA Max. Abnormal Charging Current 10 mA.	UL 1642	UL, --
03b. RTC Lithium Battery (Alternate)	Toshiba Battery Co., Ltd.	CR2032	3.0 Vdc, 210 mA Max. Abnormal Charging Current 10 mA.	UL 1642	UL, --
03c. RTC Lithium Battery (Alternate)	Mitsubishi Electric Corp.	CR2032	3.0 Vdc, 210 mA Max. Abnormal Charging Current 10 mA.	UL 1642	UL, --
03d. RTC Lithium Battery (Alternate)	Vic-Dawn (KTS) Enterprise Co., Ltd.	CR2032	3.0 Vdc, 220 mA Max. Abnormal Charging Current 10 mA.	UL 1642	UL, --
03e. RTC Lithium Battery	Matsushita Electric Industrial	CR2032	3.2 Vdc, 220 mA Max. Abnormal	UL 1642	UL, --

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

(Alternate)	Co Ltd (Panasonic)		Charging Current 10 mA.		
04. Diode (D5)	--	--	Min. 30 V, 600 mA.	--	--, --
05a-01. Polyswitch (FS1, FS2)	Polytronics Technology Corp	SMD1812P260T S	6 Vdc, 2.6 A, provided for PS2 and USB connectors.	UL1434	UL, --
05a-02. Polyswitch (FS1, FS2) (Alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	miniSMDM260	6 Vdc, 2.6 A, provided for PS2 and USB connectors.	UL1434	UL, --
05a-03. Polyswitch (FS1, FS2) (Alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	miniSMDC260	6 Vdc, 2.6 A, provided for PS2 and USB connectors.	UL1434	UL, --
05b. Polyswitch (FS4)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDM150/2 4	PTC, 24 Vdc, 1.5 A, provided for IEEE 1394 connectors.	UL1434, EN60730-1	UL, --
06. CPU Heatsink	--	--	Consist of Aluminum part and copper part. Overall 95 by 90 by 46 mm, copper part diameter 44 mm, thickness 0.5mm on bottom. Total 33 fins provided, the fin's thickness 0.65 mm, gap between fins 1.9 mm. See enclosure 3-06 & 3-07 for reference.	--	--, --
07. Heatsink (above 915 chipset)	--	--	Aluminum, overall 42.5 mm by 42.5 mm by 20.8 mm, see Enclosure 4-03 for details.	--	--, --
08. Heatsink (above ICH6 chipset)	--	--	Aluminum, overall 37.5 mm by 37.5 mm by 6 mm, see	--	--, --

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

			Enclosure 4-04 for detail.		
09. Heatsink (HS1, HS2, HS3)	--	--	Aluminum, overall 55 mm by 24.7 mm by 18 mm, see Enclosure 4-05 for detail.	--	--, --
Motherboard, MSI, type MS-7231	--	--	--	--	--, --
01. Printed Wiring Board	--	--	V-1 or better, Minimum 105 degree C	UL796	UL, --
02a. RTC Battery (BT2)	KTS (VIC-DAWN)	CR2032	3 Vdc, maximum abnormal charge current 10 mA	UL1642	UL, --
02b. RTC Battery (BT2) (Alternate)	Mitsubishi Electric Corp.	CR2032	3 Vdc, maximum abnormal charge current 10 mA	UL1642	UL, --
02c. RTC Battery (Alternate)	Matsushita Electric Industrial Co Ltd (Panasonic)	CR2032	3 Vdc, maximum abnormal charge current 10 mA	UL1642	UL, --
02d. RTC Battery (Alternate)	Sony Fukushima Corp.	CR2032	3 Vdc, maximum abnormal charge current 10 mA	UL1642	UL, --
02e. RTC Battery (Alternate)	Toshiba Battery Co., Ltd.	CR2032	3 Vdc, maximum abnormal charge current 10 mA	UL1642	UL, --
03. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12 Vdc, 0.24 A, (max. 0.4 A) 51.211CFM, max. 4.80 W	UL507,EN 60950	UL, VDE
04a-01. Polyswitch (FS4) (for VGA port)	Bourns Inc	MF-USMF110	1.1 A, 6 Vdc	UL 1434	UL, --
04a-02. Polyswitch (FS4)(for VGA port) (alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	MicroSMD110	1.1A, 6 Vdc	EN 60730-1 UL 1434	UL, TUV
04b-01. Polyswitch (FS2) (for 1394 port)	Polytronics Technology	SMD1812P150T /24	1.5 A, 24 Vdc	EN 60730-1 UL 1434	UL, TUV
04b-02. Polyswitch (FS2) (for 1394 port) (alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	miniSMDC150/2 4	1.5 A, 24 Vdc	EN 60730-1 UL 1434	UL, TUV

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
04c-01. Polyswitch (FS1, FS3) (FS1 for rear USB) (FS3 for front USB)	Tyco Electronics Corp. Raychem Circuit Protection Div	SMD1812P260T F	2.6 A, 6 Vdc	EN 60730-1 UL 1434	UL, TUV
04c-02. Polyswitch (FS1, FS3) (FS1 for rear USB) (FS3 for front USB) (alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	miniSMDC260F-2	2.6 A, 6 Vdc	EN 60730-1 UL1434	UL, TUV
05. CPU Heatsink	--	--	Aluminum part and copper part. Overall 85 by 85 by 40.5 mm	--	--, --
05a. CPU Heatsink (Alternate)	--	--	Aluminum part. Overall 85 by 85 by 40.5 mm	--	--, --
06. Heatsink (for south bridge)	--	--	Aluminum, overall 42.5 mm by 42.5 mm by 20.8 mm details.	--	--, --
07. Heatsink (for north bridge)	--	--	Aluminum, overall 37.5 mm by 37.5 mm by 6 mm	--	--, --
08. Heatsink (HS1, HS2, HS3)	--	--	Aluminum, overall 25 mm by 24.7 mm by 18 mm	--	--, --
09. Resistor (R66)	--	--	Rated 1 K ohm	--	--, --
For Main Board, MSI, type MS-7259:	--	--	--	--	--, --
01. Heat sink for CPU used	--	--	Aluminum part. Overall 85 by 85 by 40.5 mm	--	--, --
01a. Heat sink for CPU used (Alternate)	--	--	Aluminum part and copper part. Overall 85 by 85 by 40.5 mm	--	--, --
02. R.T.C. Battery (JBAT2)	Vic-Dawn Enterprise Co., Ltd	CR2032	3 Vdc, 160 mAh, maximum abnormal charge current 10 mA. The reverse current	UL1642	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
			protection is accomplished by series circuit of a diode (D4) with a 1 K ohm resistor (R47)		
02a. R.T.C. Battery (JBAT2) (Alternate)	Mitsubishi Electric Corp.	CR2032	3.3 Vdc, 200 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D4) with a 1 K ohm resistor (R47)	UL1642	UL, --
02b. R.T.C. Battery (JBAT2) (Alternate)	Matsushita Electric Industrial Co., Ltd.	CR2032	3.2 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D4) with a 1 K ohm resistor (R47).	UL1642	UL, --
02c. R.T.C. Battery (JBAT2) (Alternate)	Sony Energy Devices Corp.	CR2032	3.3 Vdc, 240 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D4) with a 1 K ohm resistor (R47).	UL1642	UL, --
02d. R.T.C. Battery (JBAT2) (Alternate)	Toshiba Battery Co., Ltd.	CR2032	3.3 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current	UL1642	UL, --



IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
			protection is accomplished by series circuit of a diode (D4) with a 1 K ohm resistor (R47)		
03. Polyswitch (FS1 for PS/2 and rear USB), (FS3 for front USB)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDC260	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03a. Polyswitch (FS1 for PS/2 and rear USB), (FS3 for front USB) (Alternate)	Polytronics Technology Corp.	SMD1812P260T S	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03b. Polyswitch (FS1 for PS/2 and rear USB), (FS3 for front USB) (Alternate)	Polytronics Technology Corp.	SMD1812P260T F	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
04. Polyswitch (FS2 for IEEE1394)	Polytronics Technology Corp.	SMD1812P150T F/24	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
4a. Polyswitch (FS2 for IEEE1394) (Alternate)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDC150/2 4	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
05. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12 Vdc, 0.24 A, (max. 0.4 A) 51.211 CFM, max. 4.80 W	UL507,EN 60950	UL, VDE
05a. CPU Fan (Alternate)	Delta Electronics Inc.	AFB0812HD	12 Vdc, 0.27 A, 43.941 CFM	UL507	UL, --
Main board, MSI. Type MS-7331:	--	--	--	--	--, --
01. Heat sink for CPU used	--	--	Aluminum part. Overall 85 by 85 by 40.5 mm	--	--, --
01a. Heat sink for CPU used (Alternate)	--	--	Aluminum part and copper part. Overall 85 by 85 by 40.5 mm	--	--, --
02. R.T.C. Battery (VBAT1)	Vic-Dawn Enterprise Co., Ltd	CR2032	3 Vdc, 160 mAh, maximum abnormal charge current 10 mA. The reverse	UL1642	UL, --

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Clause	Requirement + Test		Result - Remark		Verdict
			current protection is accomplished by series circuit of a diode (D1) with a 1 K ohm resistor (R236)		
02a. R.T.C. Battery (VBAT1) (Alternate)	Mitsubishi Electric Corp.	CR2032	3.3 Vdc, 200 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D1) with a 1 K ohm resistor (R236)	UL1642	UL, --
02b. R.T.C. Battery (VBAT1) (Alternate)	Sony Energy Devices Corp.	CR2032	3.3 Vdc, 240 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D1) with a 1 K ohm resistor (R236).	UL1642	UL, --
02c. R.T.C. Battery (VBAT1) (Alternate)	Toshiba Battery Co., Ltd.	CR2032	3.3 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a diode (D1) with a 1 K ohm resistor (R236)	UL1642	UL, --
03. Polyswitch (FS3 for PS/2 and rear USB), (FS4 for front USB)	Tyco Electronics Corp. Raychem Circuit Protection Div.	miniSMDC260	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
03a. Polyswitch (FS3 for PS/2 and rear USB), (FS4 for front USB) (Alternate)	Polytronics Technology Corp.	SMD1812P260T F	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03b. Polyswitch (FS3 for PS/2 and rear USB), (FS4 for front USB) (Alternate)	Polytronics Technology Corp.	SMD1812P260T S	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03c. Polyswitch (FS3 for PS/2 and rear USB), (FS4 for front USB) (Alternate)	Littelfuse Inc.	1812L260MR	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03d. Polyswitch (FS3 for PS/2 and rear USB), (FS4 for front USB) (Alternate)	Tyco Electronics Corp. Raychem Circuit Protection Div	miniSMDC260F-2	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
04. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12 Vdc, 0.24 A (maximum 0.4 A), 51.211 CFM	UL507	UL, --
04a. CPU Fan (Alternate)	Delta Electronics Inc.	AFB0812HD	12 Vdc, 0.27 A, 43.941 CFM	UL507	UL, --
Main board, MSI. Type MS-7334: [DVI connector is optionally provided.]	--	--	--	--	--, --
1. R.T.C. Battery (BAT1)	Matsushita Electric Industrial Co Ltd Panasonic Corp Of North America	CR2032	3.2 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a blocking diode (D8) with a 1 K ohm resistor (R258).	UL1642	UL, --
1a. R.T.C. Battery (BAT1) (Alternate)	Vic-Dawn Enterprise Co., Ltd	CR2032	3 Vdc, 160 mAh, maximum abnormal charge current 10 mA.	UL1642	UL, --

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

			The reverse current protection is accomplished by series circuit of a blocking diode (D8) with a 1 K ohm resistor (R258).		
1b. R.T.C. Battery (BAT1) (Alternate)	FDK Energy Co Ltd	CR2032	3.3 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a blocking diode (D8) with a 1 K ohm resistor (R258).	UL1642	UL, --
1c. R.T.C. Battery (BAT1) (Alternate)	Mitsubishi Electric Corp.	CR2032	3.3 Vdc, 200 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of a blocking diode (D8) with a 1 K ohm resistor (R258).	UL1642	UL, --
2. Polyswitch for PS/2 and rear USB (FS1, FS2)	Polytronics Technology Corp.	SMD1812P150T (+)	SMD type. Rated 6 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
2a. Polyswitch for PS/2 and rear USB (FS1, FS2) (Alternate)	Littelfuse Inc	1812X150PRT	SMD type. Rated 6 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
2b. Polyswitch for PS/2 and rear USB (FS1, FS2) (Alternate)	Bourns Inc	MF-MSMF150	SMD type. Rated 6 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
2c. Polyswitch for PS/2 and rear	Tyco Electronics Corp Raychem	miniSMDC150 (15)	SMD type. Rated 6 Vdc. Ih: 1.5 A.	UL1434	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
USB (FS1, FS2) (Alternate)	Circuit Protection Div		It: 3.0 A.		
3. Polyswitch for front USB (FS3)	Polytronics Technology Corp.	SMD1812P260T (+)	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
3a. Polyswitch for front USB (FS3) (Alternate)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDC260 (26)	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
3b. Polyswitch for front USB (FS3) (Alternate)	Littelfuse Inc	1812X260MR++	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
4. Polyswitch for rear IEEE1394 (FS4)	Polytronics Technology Corp.	SMD1812P150T F/24	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
4a. Polyswitch for rear IEEE1394 (FS4) (Alternate)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDC150/2 4	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
5. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12 Vdc, 0.24 A (maximum 0.4 A), 51.211 CFM	UL507	UL, --
5a. CPU Fan (Alternate)	Delta Electronics Inc.	AFB0812HD	12 Vdc, 0.27 A, 43.941 CFM	UL507	UL, --
6. Heat sink for CPU used	--	--	Aluminum part. Overall 85 by 85 by 40.5 mm, the fin approx. 0.4 mm thickness minimum.	--	--, --
6a. Heat sink for CPU used (Alternate)	--	--	Aluminum part and copper part. Overall 85 by 85 by 40.5 mm, the fin approx. 0.4 mm thickness minimum.	--	--, --
Main board type MS-7407: (For Models MS-6470XX and Hetis G31XX only)	--	--	--	--	--, --
01. RTC Battery (BAT1)	Matsushita Electric Industrial Co Ltd Panasonic Corp Of North	CR2032	3.2 Vdc, 220 mAh, maximum abnormal charge current 10mA. The reverse	UL1642	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
	America		current protection is accomplished by series circuit of diode (D9, D10) with a 1 K ohm resistor (R143)		
01a. RTC Battery (BAT1) (Alternate)	VIC-Dawn Enterprise Co Ltd	CR2032	3 Vdc, 160 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of diode (D9, D10) with a 1 K ohm resistor (R143)	UL1642	UL, --
01b. RTC Battery (BAT1) (Alternate)	FDK Energy Co Ltd	CR2032	3.3 Vdc, 220 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of diode (D9, D10) with a 1 K ohm resistor (R143)	UL1642	UL, --
01c. RTC Battery (BAT1) (Alternate)	Mitsubishi Electric Corp	CR2032	3.3 Vdc, 200 mAh, maximum abnormal charge current 10 mA. The reverse current protection is accomplished by series circuit of diode (D9, D10) with a 1 K ohm resistor (R143)	UL1642	UL, --
02. Polyswitch for PS/2 (F3)	Polytronics Technology Corp.	SMD1210P110T F	SMD type. Rated 6 Vdc. Ih: 1.1 A. It: 2.2 A.	UL1434	UL, --
02a. Polyswitch for PS/2 (F3)	Tyco Electronics Corp Raychem	microSMD110	SMD type. Rated 6 Vdc. Ih: 1.1 A.	UL1434	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
(Alternate)	Circuit Protection Div		It: 2.2 A.		
02b. Polyswitch for PS/2 (F3) (Alternate)	Bourns Inc	MF-MSMF110	SMD type. Rated 6 Vdc. Ih: 1.1 A. It: 2.2 A.	UL1434	UL, --
03. Polyswitch for USB (F1, F5)	Polytronics Technology Corp.	SMD1812P260T F	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03a. Polyswitch for USB (F1, F5) (Alternate)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDC260	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
03b. Polyswitch for USB (F1, F5) (Alternate)	Littelfuse Inc	1812X260	SMD type. Rated 6 Vdc. Ih: 2.6 A. It: 5.2 A.	UL1434	UL, --
04. Polyswitch for rear 1394 (F2)	Polytronics Technology Corp.	SMD1812P150T F/24	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
04a. Polyswitch for rear 1394 (F2) (Alternate)	Tyco Electronics Corp Raychem Circuit Protection Div	miniSMDM150/2 4	SMD type. Rated 24 Vdc. Ih: 1.5 A. It: 3.0 A.	UL1434	UL, --
05. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12Vdc, 0.24A (maximum 0.4A), 51.211CFM	UL507	UL, --
05a. CPU Fan (Alternate)	Delta Electronics Inc.	AFB0812HD	12Vdc, 0.2A (maximum 0.27A), 43.941CFM,	UL507	UL, --
06. Heat sink for CPU used	--	--	Aluminum part. Overall 85 by 85 by 40 mm. See Enclosure Diagrams 04-07 for details.	--	--, --
06a. Heat sink for CPU used (with insert copper) (Alternate)	--	--	Aluminum part and copper part. Overall 85 by 85 by 40.5 mm. See Enclosure Diagrams 04-06 for details.	--	--, --
Maniboard (for models MS-6618XXXX and Hetis G41XXXX)	Micro-Star International Co., Ltd.	MS-7430	See photo 3-26, 3-27, 3-28, 3-29	--	--, --
01. RTC Battery	Matsushita Electric Industrial	CR2032	Rated 3 V, maximum	UL 1642	UL, --

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Co. Ltd. Panasonic Corp Of North America		abnormal charging current 10mA. The reverse current protection is accomplished by series circuit of diode (D10) with a 1 K ohm resistor (R143)		
01a. RTC Battery (alternate)	Vic-Dawn Enterprise Co., Ltd.	CR2032	Rated 3 V, maximum abnormal charging current 10mA. The reverse current protection is accomplished by series circuit of diode (D10) with a 1 K ohm resistor (R143)	UL 1642	UL, --
02a-1.Poly Switch ( F2) (for rear side IEEE 1394 port)	Polytronics Technology Corp	SMD1812P150T F/24	24V, 1.5 A, CA = 3	UL 1434	UL, --
02a-2.Poly Switch (F2) (for rear side IEEE 1394 port) (alternate)	Tyco Electronics Corp Raychem Circuit Protection Div.	miniSMDC150F/ 24-2	24V, 1.5 A, CA = 3	UL 1434	UL, --
03.Overcurrent Protector for USB and PS/2 (CONN2A , CONN3B, CONN5, CONN6)	UPI Semiconductor Corp	uP7533	Voltage Range: 4.5-5.5Vdc, Maximum Continuous Current: 1.5A, Protective Current: 3.5A	UL Subject 2367	UL, --
04. Heat sink for CPU used	--	--	Aluminum part. Overall 85 by 85 by 40 mm. See Enclosure Diagrams 04-07 for details.	--	--, --
04a. Heat sink for CPU used	--	--	Aluminum part and copper part.	--	--, --



IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
(with insert copper) (Alternate)			Overall 85 by 85 by 40.5 mm. See Enclosure Diagrams 04-06 for details.		
05. Heatsink (HS1)	--	--	Aluminum. See Enclosure Diagrams 04-11 for details.	--	--, --
06. Heatsink (for Q15,Q 16,Q 11,Q 12,Q17,Q18,Q19 ,Q20,Q21,Q23,Q 31,Q32)	--	--	Aluminum. See Enclosure Diagrams 04-12 for details.	--	--, --
07. CPU Fan	Delta Electronics Inc.	AFB0812HHD	12Vdc, 0.24A (maximum 0.4A), 51.211CFM	UL507	UL, --
07a. CPU Fan (Alternate)	Delta Electronics Inc.	AFB0812HD	12Vdc, 0.2A (maximum 0.27A), 43.941CFM	UL507	UL, --
<sup>1)</sup> an asterisk indicates a mark which assures the agreed level of surveillance					

## **Enclosure**

### **Photographs**

Supplement Id	Description
3-01	Overall View (1/2)
3-02	Overall View (2/2)
3-03	Interior View
3-04	Main Board Component Side View
3-05	Main Board Layout Side
3-06	CPU Heatsink Top View
3-07	CPU Heatsink Bottom View
3-08	Front View without Plastic Panel
3-09	Top view of motherboard(MSI/MS-7231)
3-11	Front view of motherboard(MSI/MS-7231)
3-12	Top view of motherboard(MSI/MS-7259)
3-13	Bottom view of motherboard(MSI/MS-7259)
3-14	Top View of Mainboard type MS-7331
3-15	Bottom View of Mainboard type MS-7331
3-16	Top View of Mainboard type MS-7334. (for Models MS-6441XX, Hetis 965XX)
3-17	Bottom View of Mainboard type MS-7334. (for Models MS-6441XX, Hetis 965XX)
3-18	Front View of Models MS-6441XX, Hetis 965XX
3-19	Back View of Models MS-6441XX, Hetis 965XX
3-20	Top view of Mainboard type MS-7407
3-21	Bottom view of Mainboard type MS-7407
3-22	Unit overview with alternate enclosure - 01
3-23	Unit overview with alternate enclosure - 02
3-24	Unit overview with alternate enclosure - 03
3-25	Plasitc Stand Base
3-26	Top view of Mainboard type MS-7430
3-27	Bottom view of Mainboard type MS-7430
3-28	Connectors view of Mainboard (type MS-7430) -01
3-29	Connectors view of Mainboard (type MS-7430) -02

## **Enclosure**

### **Diagrams**

Supplement Id	Description
4-01	Enclosure Drawing
4-02	HS1-HS3 Heatsink Drwaing
4-03	915 Chipset Heatsink Drwaing
4-04	ICH6 Chipset Heatsink Drwaing
4-06	CPU Heatsink Drwaing (Insert Copper) of Models MS-6470XX, Hetis G31XX, MS-6618XXXX and Hetis G41XXXX
4-07	CPU Heatsink Drwaing (without Insert Copper) of Models MS-6470XX, Hetis G31XX, MS-6618XXXX and Hetis G41XXXX
4-09	Encloaure Drawing (alternate)
4-10	Plastic Stand Base
4-11	Heatsink Drawing (HS1) (Mainboard, MSI, type MS-7430)
4-12	Heatsink Drawing (for Q15,Q 16,Q 11,Q 12,Q17,Q18,Q19,Q20,Q21,Q23,Q31,Q32) (Mainboard, MSI, type MS-7430)
4-13	Metal mesh for systemm fan